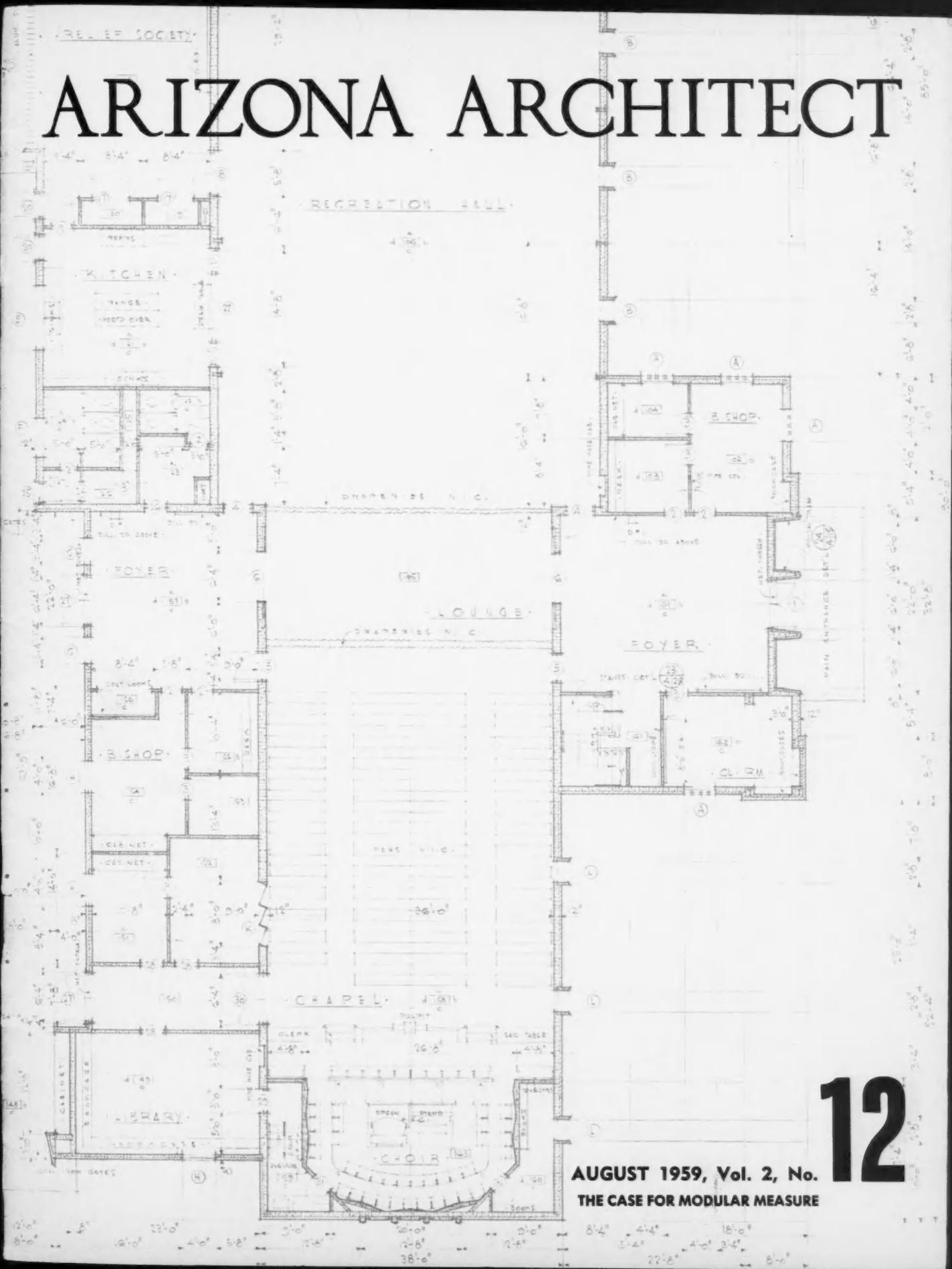


ARIZONA ARCHITECT



AUGUST 1959, Vol. 2, No.
THE CASE FOR MODULAR MEASURE

12

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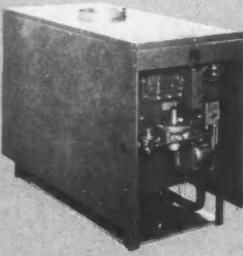
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Official Monthly Publication of the
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comprised of
**CENTRAL ARIZONA CHAPTER and
SOUTHERN ARIZONA CHAPTER of
THE AMERICAN INSTITUTE OF ARCHITECTS**

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Subscriptions: \$4 a year
Per copy: 40 cents

August, 1959
Volume 2, No. 12

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THE PRESIDENTS' PAGE



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GUEST COLUMN BY KEMPER GOODWIN, AIA

I believe the most important single problem facing architects today is an up-grading of the architect's professional status in the eyes of the general public. With the possible exception of the teaching profession, I know of no other profession which is held in lower esteem. Our services and the benefits to the client are little understood by a large percentage of the public. Nonetheless the architect's work touches the lives of all. The hospitals where we're born, the schools we're educated in, our places of worship, business, recreation and our homes, are planned by architects.

Our buildings are helping people to live better — whatever they do, wherever they go. The public must be made to realize this, to respect our profession and the value, esthetically and monetarily, of the services we have to offer. We, as individual architects, can do a great deal to improve our lot. We can accomplish more through united effort, and the best way to accomplish this is through our chapter meetings. To me, it seems almost fantastic that we are either too busy or care too little about the future of our profession to devote a few hours each month in active participation in our chapter affairs.

This brings me to the big question. How about attending our monthly meetings? Too many of us don't go. When we do attend we find fault with the president and other officers. We never accept an office, it's much easier to sit back and criticize. When our opinion is asked, we have nothing to say, but after the meeting we tell everyone how things should be done. We do nothing more than is absolutely necessary and when others do the lion's share we tell everyone how the organization is run by a clique.

The Central Arizona Chapter needs the attendance and support of every member. We must develop the full strength and potentials of our organization if we hope to convince the general public that ours is an honorable profession and that our services will repay the client many fold. It can and must be done.

GUEST COLUMN BY MRS. FRED H. JOBUSCH

"Your husband is an architect? Oh, how wonderful! My son wants to be an architect. He is very artistic, plays the piano beautifully. I was just saying to my husband the other night, 'Bruce,' I said, 'we must build a house like the Joneses. They had a builder build them such a nice house, such a shiny kitchen, and the bathrooms were wonderfully large.' My dear, does your husband build houses?"

"No, I'm afraid my husband doesn't build houses, he designs them. He is an architect, not a builder," replied wifely I.

Is there an architect's wife reading this who hasn't been approached and interrogated by Mrs. Wellmeaning regarding her husband's preoccupation (profession)? It's sad, it's frustrating, it's our own fault. We haven't reached our audience. People do not understand architects.

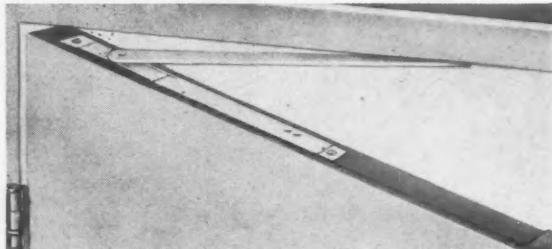
These conversations are typical of those experienced by architects' wives at bridge parties, women's club luncheons, around swimming pools, etc., to wit:

"I feel so sorry for doctors and lawyers; they go to school so many years, and then it's usually two or three more years before they can hang out their shingle to practice. After so many years they are entitled to their nice fees, they've worked so hard."

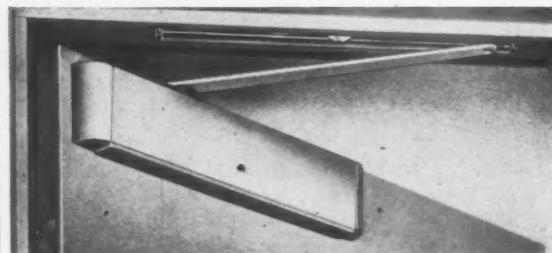
"We talked to an architect the other day about building a house. He had wonderful ideas and was quite interested in our family life, but so-o-o-o expensive. Why, besides paying for a house we would have to pay him another 8 per cent for a fee. How can he do that when you can get plans from House and Side Yard Magazine for only \$25? So we bought a house. Of course it cost us \$2,500 more than we wanted to spend, the hallway is over 50 feet long and three feet wide, and the arrangement isn't what we wanted, but it included a range, oven, refrigerator, dishwasher and an automatic cat ejector. The realtor's fee and closing costs only came to 10 per cent."

Wifely comment: "I bid seven no trump, dearie, I couldn't win, anyway."

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The Editor's PERSPECTIVE

AN ACT OF STATESMANSHIP

LAST MONTH Arizona came very close to a major economic disaster. The calamity was avoided by settlement of the 45-day strike-lockout dispute between the contractors and operating engineers' union. Behind-the-scene-agreement came within a matter of hours before the general contractors were to vote on going non-union, which the building contractors had already decided to do.

Contractors were already recruiting non-union help in Texas, New Mexico and Oklahoma. Any attempt to force non-union employees and union workers together on jobs would have opened up an internecine war of incalculable cost. Irresponsible members of both sides might well have resorted to foolish, dangerous, and perhaps illegal methods to resist the acts of the other side. Work would have resumed but at an erratic pace. While other unions had at one stage in the negotiations lost much sympathy for the Operating Engineers, a subsequent action by the contractors' official bargaining representatives had been so resented that the labor movement was again solidified and would have supported the engineers all the way.

Not only would there have been slow-downs on most construction and perhaps inferior workmanship, but many union families would have moved to other states rather than continue to endure economic uncertainty. This would have meant foreclosures on many homes, unpaid accounts and general economic distress. The slow-down would inevitably have cost the building supply industry a tremendous loss in sales, and professional people much work. It would have discouraged the influx of new industry.

In the face of this tragic possibility, formal negotiations between the disputants had completely broken down. Attorney General Wade Church, who had had extensive experience both as a contractor and union representative, sent confidential telegrams to both parties offering to mediate. It was not publicly known, but his offer was accepted by responsible leaders of both sides and there followed more than two weeks of meetings, first with one group then with the other.

One major issue was the rate of wage increase to be granted the Operating Engineers. The union wanted wages tied to Southern California rates. The Attorney General made his own independent analysis of wage rates not only in California, but Nevada, Utah and New Mexico as well. He discovered that in 1951 all the states paid the same rates for operating engineers. By averaging the present rates in the other Southwest states, and projecting them, Mr. Church concluded that a 7½% increase in each of

three years would tend to restore Arizona wages near an average of the other states. It was this device that suggested a settlement midway between the 7% offered by the contractors and the 8% demanded by the union.

While this study was getting under way, Governor Paul Fannin asked representatives of both parties to meet at his office and resume formal negotiations. He invited television and press cameramen in and handed both parties press releases stressing the public aspects of the continuing dispute. In a strong light of publicity they were asked to continue meeting — and did for awhile without any success. By this time animosities had so increased that such meetings were actually opposing their purpose and even delaying the study quietly being made by the Attorney General.

When the formal meetings again broke off, the Governor invited federal mediator William Halloran to try his hand. Neither side dared risk public condemnation by refusing to meet, and again half-hearted sessions resumed. Discussions started right back where they had been at the beginning, but with bitterness at a new high point.

It was at this time that the Home Builders voted to go non-union and the general contractors were believed ready to do the same. A call from Attorney General Church to Richard Kleindienst, attorney for the contractors, stalled the decision by the general contractors. The two lawyers met and in a frank discussion agreed that the situation was critical for the state and that both would use their influence to persuade the parties into agreement on the basis of a proposal the Attorney General had by now worked out.

The proposal covered the major economic issues that had been a bar to agreement. Some of the proposals favored the contractors, others the union.

In a final act of statesmanship the Attorney General offered to make the proposal jointly with the Governor in order that the prestige of his office would be added to bring about acceptance by memberships of the two organizations. Governor Fannin agreed, but only on condition that the announcement would be made by his mediator, Mr. Halloran. To avert disaster, the Attorney General assented.

The announcement was made, both sides voted to accept the proposal, and following settlement of minor details the nearly disastrous strike-lockout was ended.



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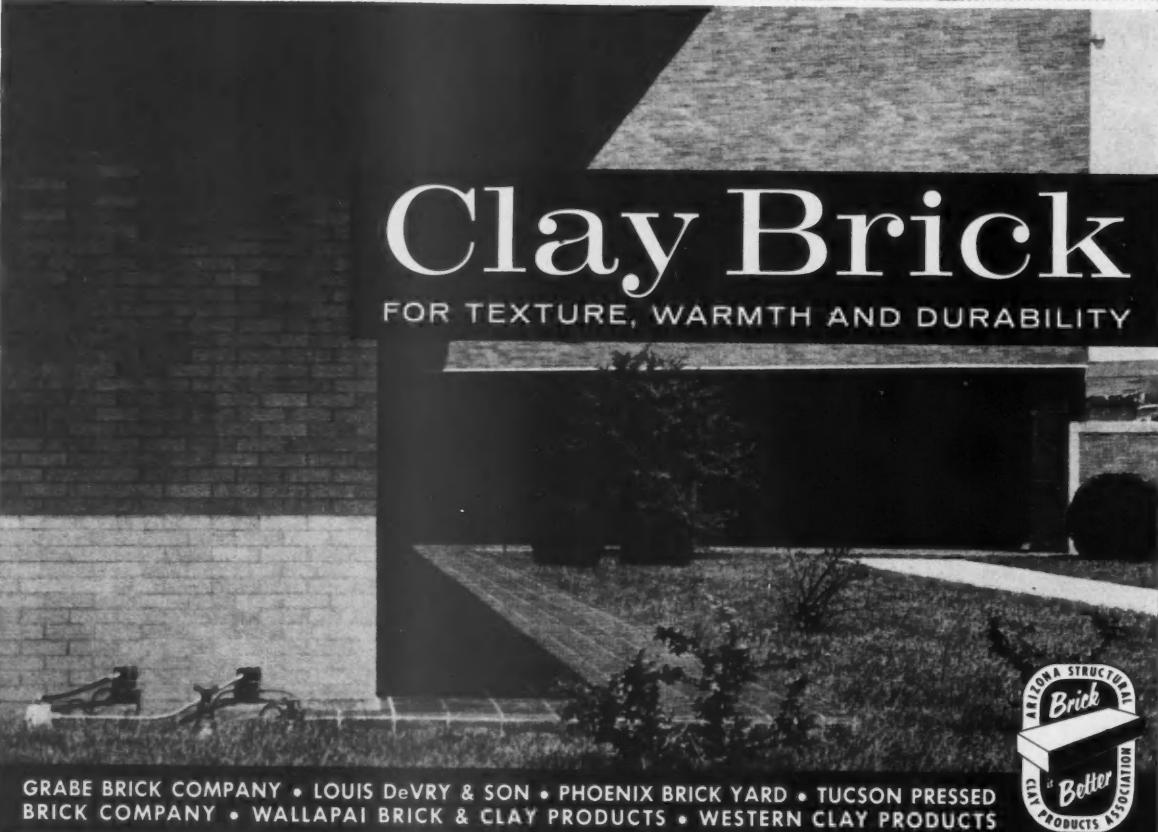
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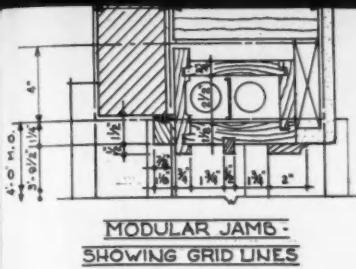
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The Architect And Modular Measure

By GUDMUND MARTINSON,
Southern Arizona Chapter, AIA

The architect, in pursuit of better ways to serve his clients, has always endeavored to reach perfection and esthetic command of design principles known to his day and age. He has sought in a tireless manner to serve his fellow man in the public spirit of achievement worthy of the enlightened future. His inventiveness in the use of new and better materials and artistic inspirations to set the present over the past have been his passwords to progress. He has provided the public with designs for structures imbued with beauty, utility and environmental satisfaction.

Unfortunately, his efforts, although almost always well intended, have often failed to measure up to the utmost in his ability. His limitations usually can be traced to budget allocations encroached to such an extent that proper research and study of problems confronting him have become prohibitive in cost. An architect, when starting work on a project, must consider the budget, and plan accordingly the time he can afford to spend on design, working drawings and supervision. These phases, when completed, must come within the scope of fees to be received if the architect is to stay in business.

A solution to the dilemma of high costs is modular measure. The arguments against it — that it creates monsters of stereotyped buildings and that manufacturers refuse to produce building materials on the modular grid system — had some real basis in truth some years back. In the present day and age, however, they have become utterly untrue.

Modular measure is a system of organization and order which will save time and money for the architect, contractor and owner alike, without restricting the designer's imagination and ability.

It is truly heartbreaking to watch a draftsman labor over new details for every job and see the final result take the shape of details already on hand from previous jobs. It is equally heartbreaking to see a designer lay out floor plans and elevations in which every piece of lumber used must be cut, with losses from a few inches to several feet, due to lack of uniform standards and coordinated moduli.

Modular measure standardizes details for given materials, yet it is flexible enough to fit all conditions. Topnotch draftsmen earning from five to ten cents per minute at work can really rack up savings by using modular details from office standards files. The draftsman or designer is not at fault, however, if management refuses to recognize these helpful

and time-saving aids and prefers to prod the antiquated road of Psammetichus or Nebuchadnezzar.

The manufacturer — the supplier griping about high costs of production and complex inventories — should consider the fact that modular measure is a simplification of habits of complexities unnecessary and cumbersome in practice. He should realize that production of building materials on the modular basis actually reduces inventories of sizes and shapes that must be carried in stock. Hence he lowers production units and costs and capital inventory needs and provides savings to himself and his customers.

It is understandable that a client is somewhat doubtful when he sees construction workers merrily chopping inches of blocks and bricks to make them course out to odd dimensions from the architect's plans, or when he watches inches and feet cut off studs, boards and beams to fit the same plans. The ever increasing waste pile will have to be carted away, sending dollars down the drain and needlessly depleting the owner's already thinned wallet.

Who is at fault? No one in particular. The culprit is bad management and coordination in general among all concerned. Modular measure provides the answer, and everyone reaps extra profits from reclaimed dollars and cents otherwise thrown to the fair winds.

Already there are enough modular building products on the market to serve most needs and more will surely follow if architects band together for their own salvation and that of their clients and begin to work the modern way under modular measure.

The four-inch moduli has been established through long and costly research and found to be the unit of measure most suitable. By employing such a standard unit in dimensioning, the unwieldy fractions are seldom necessary. Those familiar with architectural drafting know what elimination of fractions means in saved time. Modular units in construction go together at speeds far greater than otherwise are possible.

Everyone comes out a winner. The architect saves money on saved drafting time (time which can be used for greater refinement of design); the builder saves money on saved erection time; the owner saves money on less labor time and less materials.

The modular measure picture rightfully presents an attractive pattern, a pattern well worthy of the high ideals of the architectural profession. It should be the base word — not a byword — in every architect's office.

Revolution In Office Practice

Offices which have adopted modular do not revert. This survey shows why.

By BYRON C. BLOOMFIELD,
Executive Director,
Modular Building Standards Association

In respect to a request from *Arizona Architect*, I have spent six weeks sizing up the potentialities and extent of use of modular measure in architectural offices. This investigation has also led me to several schools of architecture and I have discussed the subject with the teaching staffs. All of this has led me to one unalterable conclusion . . . that architectural office practice methods are in the process of going through the most rapid revolution in history!

The AIA Office Practice Survey of 1956 has summarized in the Handbook of Practice, by Cowgill, that the results of their query on the extent of the use of modular shows that over half the architectural firms are now basing over-all dimensions in increments of four inches, and that 17 per cent, or nearly one out of five architectural firms, are using the four-inch grid on large scale details, which simply verifies that they are using modular drafting techniques in complete form.

In visiting the offices of Sargent, Webster, Crenshaw and Foley, I discovered that all of their work is modular and has been for several years, with the exception of one addition to an existing non-modular building. They decided to use conventional drafting on this particular job, after considerable discussion, and now state that if they had it to do over again, they would certainly use modular on that project also.

I noticed that about half of the drawing boards had a green underlayment for drawings, with reference grids marked on them. Each draftsman decides whether or not he will actually show the four-inch grid on details, or reference grids on the plans. That particular office converted to modular with no more reference material than the "Five Fundamentals of Modular Drafting" pamphlet. (See page 11). Under no circumstances would they consider reverting to conventional drafting techniques, since they maintain that modular drafting allows them to realize a considerable number of benefits with no limitations.

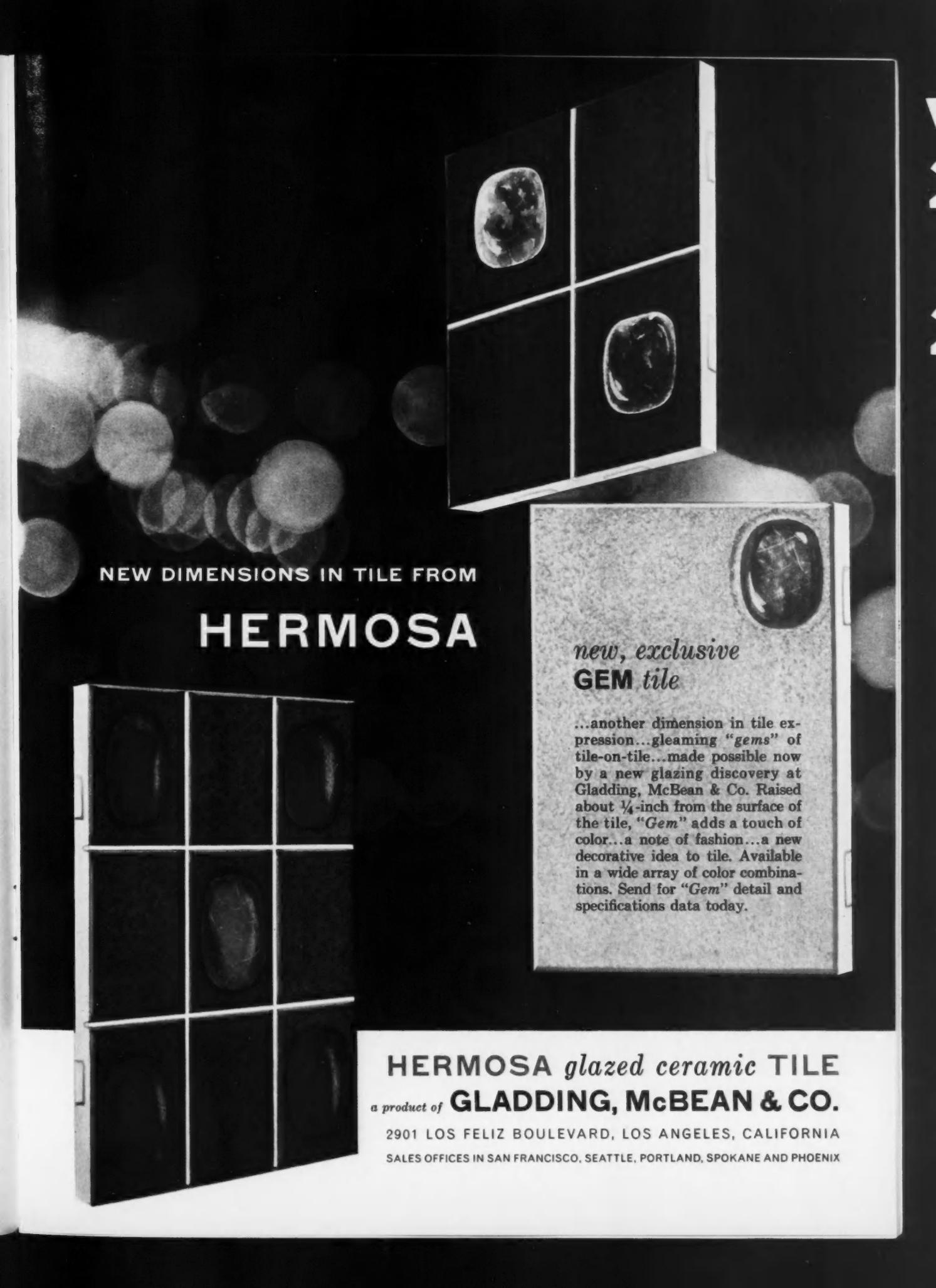
The attitude of this firm seems to be apparent in all offices which have made the effort to go through

the second or third job using modular measure exclusively. I have a set of drawings of a new music building. The job is 100 per cent modular, although the site is pie-shaped, on extremely rough terrain, and no two rooms have parallel walls, with the exception of the administrative offices. The drawings, by C. E. Silling and Associates, are astoundingly simple in their dimensioning and a clarity of details is apparent throughout. Mr. Silling would have considered no other method for the working drawing production on this job, as has been the case in his office for the last 10 years. This particular music building is probably as complex in layout as any building can ever get, yet it has realized the economies of modular measure in the architect's office as well as in the field.

The offices which have adopted modular do not revert. It is a one-way process, which would indicate that the 17 per cent in the AIA survey has surely grown since 1956. We expect the rate of conversion of offices to snowball at this point.

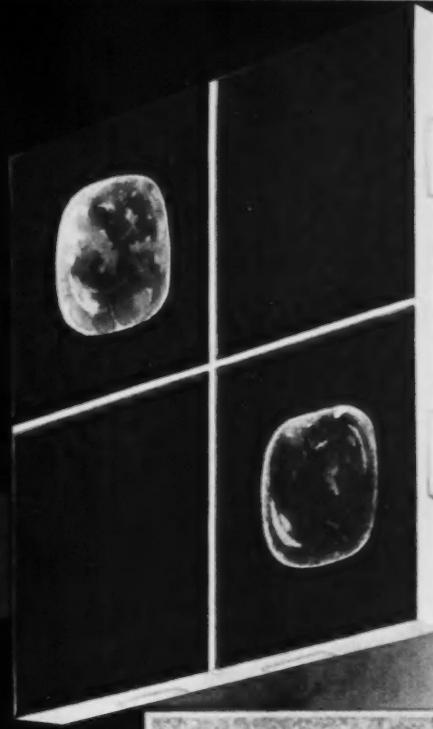
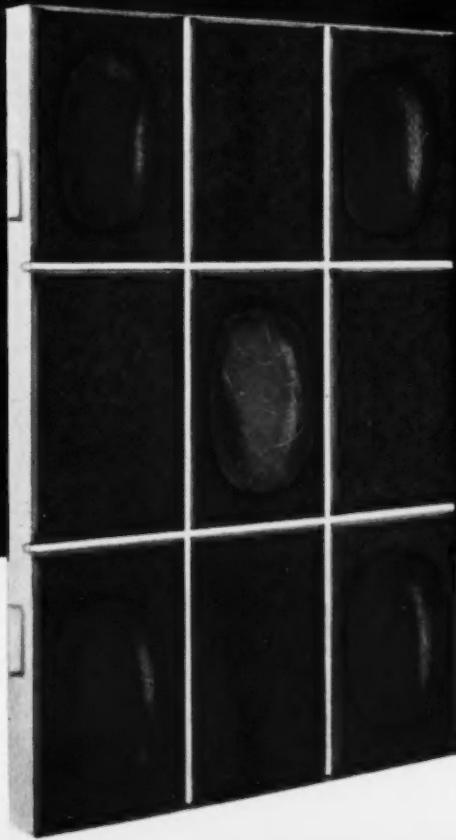
Statistics such as these will be all that is necessary to encourage the cooperation of producers of building materials to identify correct dimensional standards for their building products to make them modular, and thusly compatible with each other. Architects have already found enough modular products on the market and have learned that their incorporation realizes economies that more than offset the relatively few special orders which they may elect to incorporate. Actually, special orders are seldom necessary, since available conventional materials can be incorporated with no more difficulty than has been the case in the past. Architects using modular repeatedly emphasize that in-place-costs are considerably less for modular materials than for conventional ones requiring special cutting and fitting somewhere along the line.

Modular buildings appear no different from any other buildings, and it is quite a revelation sometimes to learn which well-known buildings have been constructed from modular working drawings. Perhaps the best testimony to the effectiveness of modular measure is to be obtained from architects who have used it, outlining the narrow spread of bids and reaction from the contractor awarded the job. That may be the quickest way to remove areas of doubt and substance for argument.



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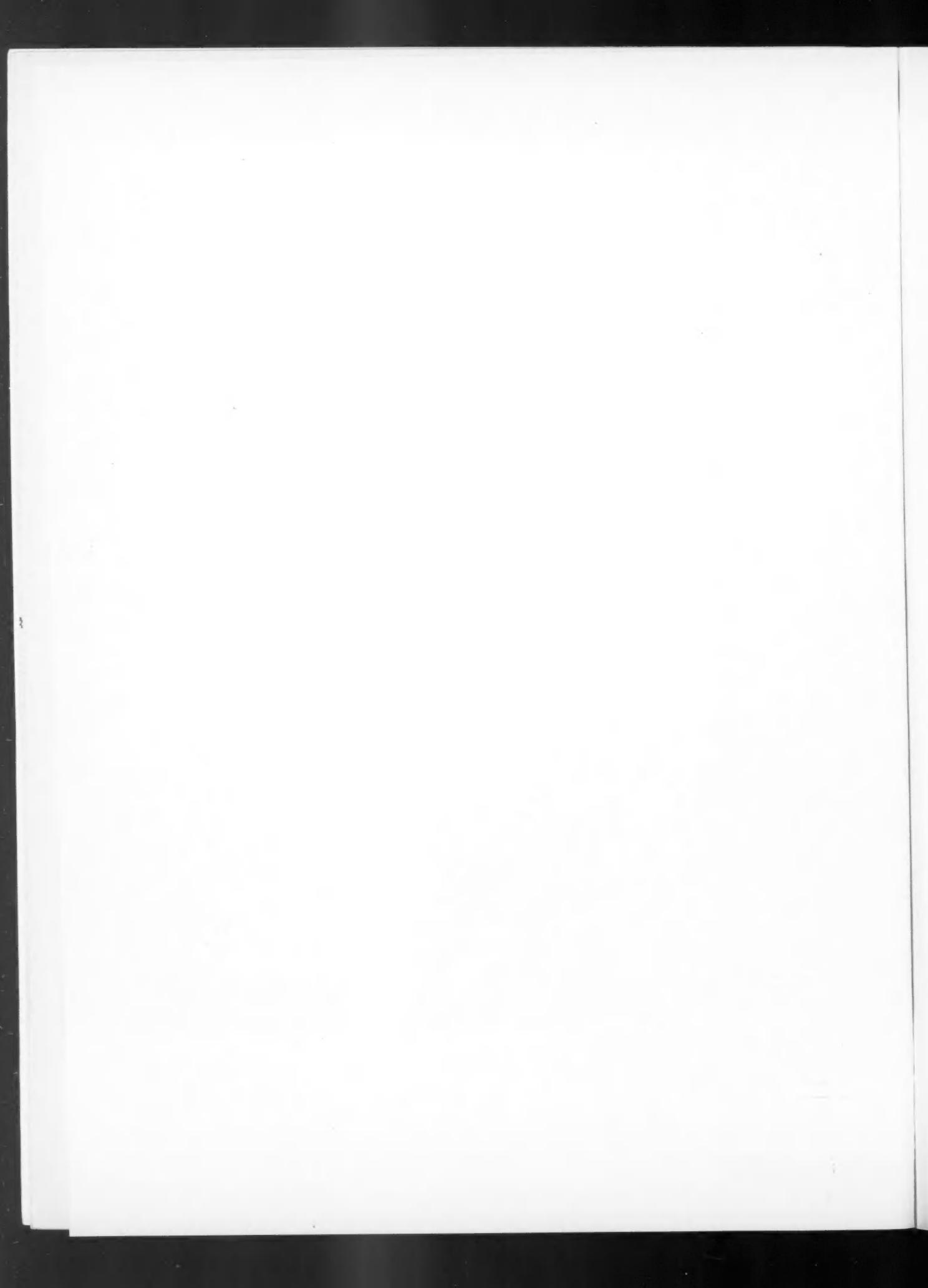


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How Modular Works

The chief deterrent to a mass change-over in architectural offices to modular measure is said to be an unfounded fear that transition time may be too costly. The most ardent proponents of modular measure admit that the first set of modular drawings will take more time, but they insist that countless advantages will accrue to the architect by the time the second set is on the board.

William Demarest Jr., for over five years head of the modular division in the AIA department of education and research, maintained that "it is hard to realize how simple the change to modular drafting can be until you've done it yourself."

"Riding a bike looks tricky to those who haven't learned," Demarest points out. "This is the case, too, with modular drafting; the only way to learn is just to start doing it. Once practised, modular dimensioning (like bike-riding) turns out to be so simple that it quickly becomes second nature . . . one hears architects who have been using modular measure state flatly that they would never consider going back to haphazard dimensioning, even if modular-size materials were no longer available."

Demarest lists five fundamentals which must be followed in order to produce modular drawings. Cop-

Like bike riding, it's a cinch;
But don't quit with the first try.

ies of his pamphlet can be obtained free from the national AIA or from the Modular Building Standards Association. In essence, the five fundamental practices include:

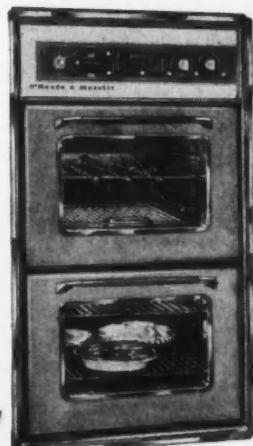
1. If you make use of one or more design-modules in laying out a building, be sure that they are multiples of four inches, such as 16", 40", 78", 20'-0", and so on. Any four-inch multiple will do, the idea being simply to make it easier for the draftsman, later on, to convert the designer's preliminary sketches into scale-drawings dimensioned in multiples of the 4" module.

2. A detail begins with the gridlines. As a detailer, you must set them down first whenever you do a detail-drawing of any kind. This must be an inviolate rule for any drafting team which intends to produce modular drawings. There are no exceptions; even hasty freehand sketches of only part of a detail, jotted down during discussion or study of a problem, must all start with an indication of the 4" modular grid.

3. Small-scale layout drawings — plans, sections and elevations — give nominal, or "grid," dimensions. As draftsman, you must realize that the grid is still there, even though it has to be invisible when the

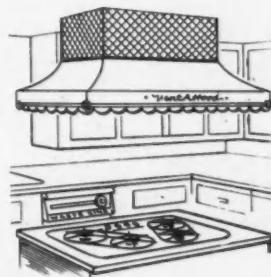
(Continued next page)

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BUILT-IN RANGES



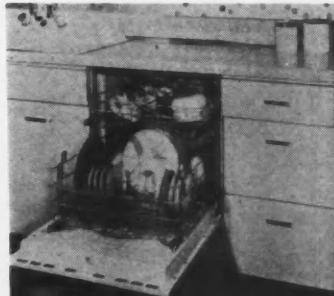
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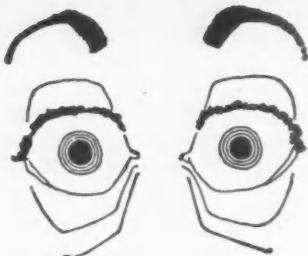


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HOW MODULAR WORKS

building is drawn at such scales. These drawings show nominal surfaces: nominal walls and partitions, nominal finished-floor, etc. This will mean that, for the most part, lines indicating such surfaces will coincide with the invisible gridlines. Thus, the distance between the arrow at one end of a dimension-line and the arrow at the other end will be some multiple of four inches.

Do not interpret this to mean that such things as nominal six-inch stud partitions and nominal 10-inch cavity walls should be increased arbitrarily to eight inches and 12 inches. Use the nominal dimensions as originally intended. And, although nominal finished-floors must be located on gridlines, floor thicknesses need not be in four-inch multiples; modular measure introduces no requirements as to ceiling heights.

4. Dots and arrows at the ends of dimension-lines have a definite significance on modular drawings. This results from the fact that you do not show the four-inch modular grid on small-scale plans, sections and elevations. In referring back and forth between these layout drawings and the large-scale detail drawings, it is important to know exactly where any particular detail fits into the building as a whole. The modular grid makes this clear and simple, even when the same detail occurs at several different locations.

This is possible only because the grids appearing on the various detail-drawings actually represent small portions of the three-dimensional over-all building grid. A great many of the lines to which you dimension on the small-scale layout drawings will coincide with the building grid. In other words, they will be gridlines; it is important that you identify them as such. Therefore, a dimension taken to a gridline must be indicated by an arrow; but where a dimension-line terminates off the grid, a dot must be used instead. Whether at large scale or small, whether the grid is drawn in or not, always use an ARROW when dimensioning to a gridline; when dimensioning to a point off the grid, use a DOT.

5. Vertical dimensions are coordinated by the final rule of modular drafting, which fixes floor heights as follows: nominal finished floor is a gridline; actual finished floor is located $\frac{1}{8}$ " below a gridline, with one exception. In wood-frame construction, the top of the sub-floor or of slab-on-ground coincides with a gridline.

Demarest concludes with a comparison of modular drafting with an "egg-crate" of reference planes which are everywhere throughout the space the building will occupy.

"Once the draftsman has formed the habit of thinking primarily in terms of this '3-D' egg-crate, instead of '1-D' dimension lines, he has made the change to modular measure. He will then need no coaching from anyone in order to achieve more orderly, more accurate drafting of working drawings and details." •

THE BOX SCORE

Benefits of modular measure have been summarized by *Progressive Architecture* to include:

- **Fewer Drafting Errors** — This one benefit is ample justification for office conversion to modular.
- **Clearer Detailing** — The draftsman is obliged to think through his details in order to locate them properly within the grid and in reference to adjoining building elements.
- **Faster Production** — Reduced drafting cost: slight reduction of efficiency on the first modular project is an investment in efficiency and savings on all future projects.
- **Coordination of Unit Sizes of Materials** — A steady increase in availability and variety of modular building materials is cumulative. However, modular and non-modular materials can be used in the same project with improved overall drafting efficiency and savings on modular materials.
- **Closer Cost Estimating** — By testimony of building contractors. Such savings are ultimately passed on to the owner in lower building costs.
- **Quicker Job Site Layout** — Dependent upon cumulative experience of superintendents and foremen.
- **Improved Quality and Reduced Cost of Masonry** — This is effective principally through elimination of cutting and fitting, also ease of layout and lack of complicated dimensioning.
- **Freedom in Design** — Two-inch tolerance and the possibility of placing building elements on center or either side of grid line gives the designer plenty of latitude. Unusual features can always be specially detailed and dimensioned.

— From MBSA publications.

NEW LIBRARY SERVICE

The School of Architecture, Arizona State University, has launched a program designed to provide a book reference service for Valley architects. Under the direction of Milton D. Lowenstein, Assistant Professor of Architecture, final plans include the acquisition of a comprehensive, technical library, and a system whereby architects may use the books in their own practices and for their own enjoyment. To this end, Lowenstein has asked that all local architects take part in the compilation of this library by suggesting titles that would be of the greatest benefit to the profession and the individual. Such suggestions may be mailed or telephoned to the Central Arizona Chapter office or to Lowenstein at the School of Architecture, ASU. Details of the book-borrowing system will be announced at a later date.

Hidden Efficiency at Valley National Bank Operations Center, Phoenix



Complete burning of old, yet confidential bank records is assured in this deluxe model, 400 pounds per hour capacity **On The Spot** incinerator at 214 E. Roosevelt, Phoenix.

Its design permits installation and completely safe operation in limited space.

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HARDWARE TIPS

*By Veron Junger
NUMBERS GAME*

A.H.C.'s find that architects employ two common methods of handling the door openings in their plans. One method is to group doors by type (e.g. all wood flush doors; all hollow metal doors, etc.) and to describe hanging and hardware functions elsewhere in a general text block. The other method is to list openings numerically (e.g. 1, 2, 3, 4, etc.) and to describe the doors, hanging and hardware functions opposite the numbers.

A.H.C.'s, hollow metal door manufacturers and mechanics generally prefer numerical listing. In writing hardware specs A.H.C.'s treat each opening separately, so numerical listing saves them time. Hollow metal men prefer numerical listing, because most of them identify doors and frames by stamping job number and location on the center hinge reinforcement of each door and frame. There isn't room for lengthy description. Mechanics prefer numerical listing, because this makes it easier to match doors, frames and hardware with proper openings.

So, to be kind to A.H.C.'s, the hollow metal door people and the mechanics, we suggest that you use the numerical system. It will be appreciated.

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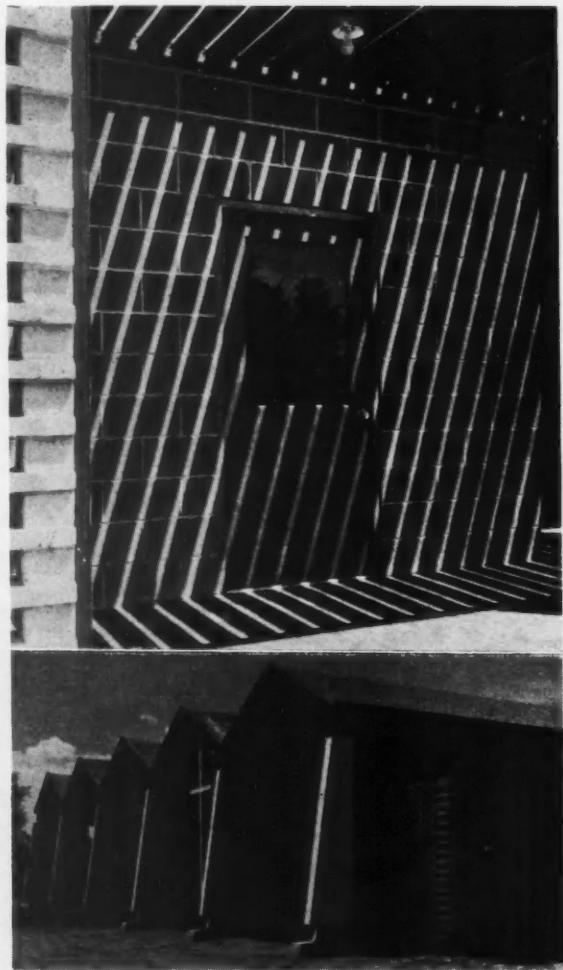


Phoenix, Arizona

Modular Does Not S

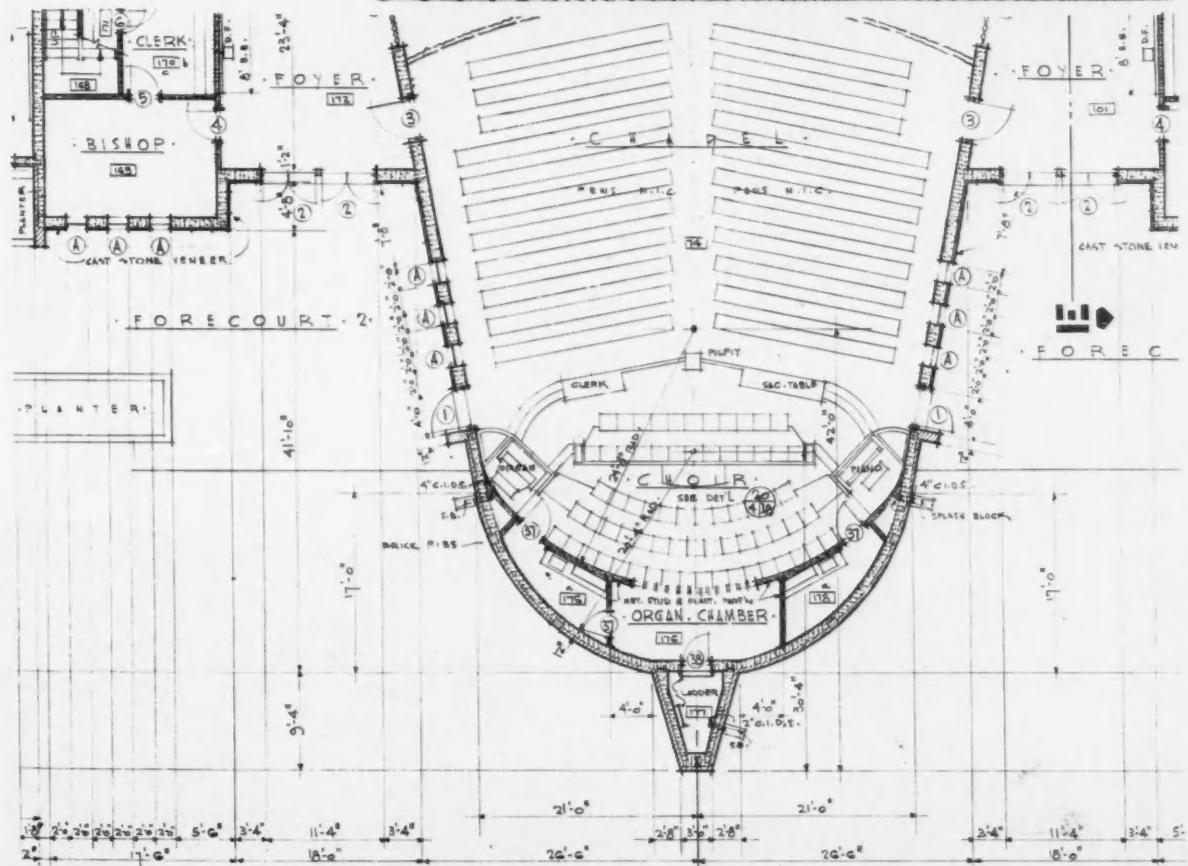
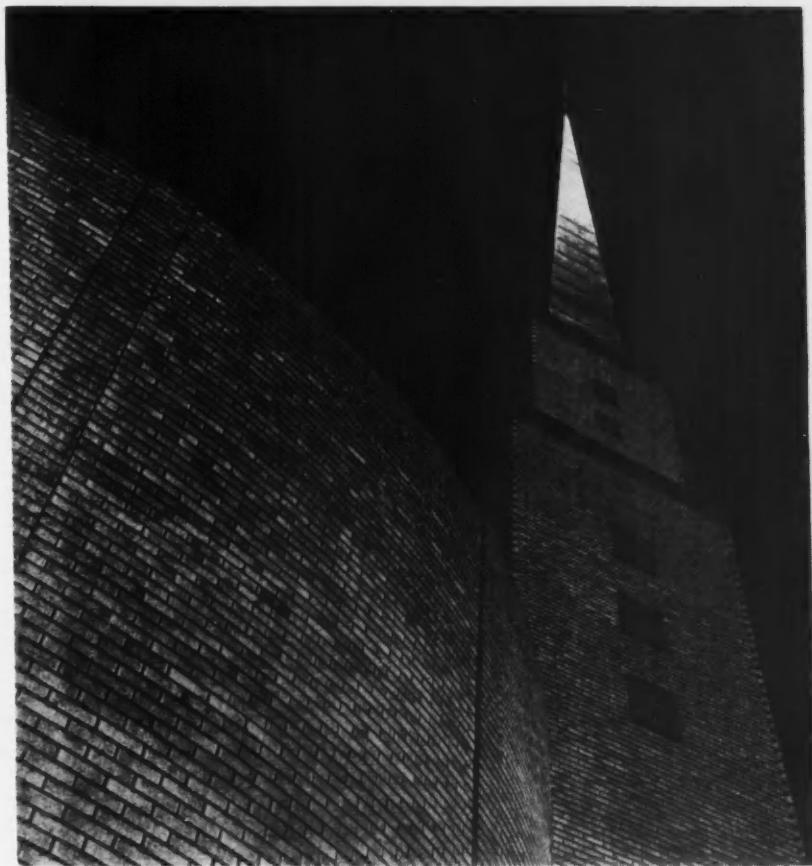
Curves and angles are perfectly at home with modular measure, as may be seen by the photo and detail at right of the fully modular church designed by Martin Ray Young, Jr., AIA, for the Phoenix 9th and 10th Wards, The Church of Jesus Christ of Latter Day Saints. Note the measurements and complete absence of fractions. Also note the beautiful brickwork.

Photos below are of the education building for Lutheran Church of the King, Tucson, designed by Edward H. Nelson, AIA. Modular block fits perfectly, needs no costly cutting on job. Design uses sun to create ever-changing light texture on simple wall. Tucson architects complain that local modular clay brick is unavailable. Suppliers take note!



St Stifle

D E S I G N



Modular Dimensions For Prestressed Concrete

By JAMES M. MURPHY
Senior Civil Engineering Student
Arizona State University

The author is indebted to the Arizona Sand and Rock Company, Inc., the Prestress Concrete Division of Fisher Contracting Company, and Martin Ray Young, Jr., Architect, for their cooperation and assistance.

Modular dimensioning of prestressed concrete can lower building costs. Modular dimensions are not new; if they were absent from the steel, lumber, or building block industries, construction with these materials would be considered uneconomical by today's standards.

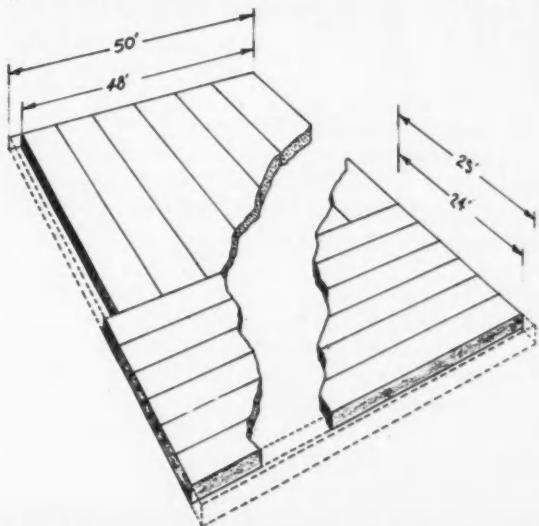
Arizona architects, engineers, and prestress producers have done a commendable job developing economical applications of prestressed concrete. Perhaps, however, attention should be focused on the cost-cutting features of the modular dimensioning of this building material. For example, construction was recently completed on a small Phoenix building employing 15 prestressed concrete members, each vary-

ing slightly from the basic design. Many of the differences between these units were small, thus the builder could have reduced the prestressed concrete cost more than 10 per cent had he used a uniform design for the prestressed members. Although specifications for prestress are usually more uniform than the example, architects still could make substantial savings in prestressed concrete costs by employing dimensions that are modular. The prestressed concrete industry must provide a material that fits together on the job, but the dimensions of the units they produce are greatly influenced by architectural demands. Consequently, the prestressed concrete producers are dependent upon the architect's cooperation in their development of a modular dimensioned product.

Modular design can be applied to prestressed concrete. To establish a modular measure of this nature, Arizona architects and prestressed producers must develop modular units that are practical to manufac-

The advertisement features a large, stylized graphic of a CORDEK structural concrete unit. The unit is shown in perspective, highlighting its depth and the circular holes along its top edge. To the left, a dark rectangular logo contains the word "CORDEK" in a bold, sans-serif font, with "by Superlite" written in a smaller script font below it. To the right, the word "NEW" is prominently displayed in large, bold, block letters. Below "NEW", the text "structural concrete unit for roofs and floors" is written in a smaller, vertical font. At the bottom right, a separate dark rectangular box contains the "SUPERLITE BUILDERS SUPPLY CO." logo, the address "4012 N. Central Ave., Phoenix, Arizona", and the phone number "AM 5-4755".

ture and well coordinated with the dimensions of other building materials. Perhaps four-foot module widths and eight-foot module lengths would work well for roof sections and floor slabs. Manufacturers will probably continue to produce a variety of basic designs, such as tees and flat slabs. Builders' specifications sometimes confront the architect when he tries to use modular dimensions in his designs. The average builder has definite ideas about the exact size of



Best use of prestressed comes with measurements that are multiples of four or six feet.

the building required to fit his needs. He may at first be reluctant to change his over-all dimensions a few feet so that his building would be modular in its dimensions. However, when he becomes aware of the difference in cost between modular and non-modular building, his ideas about his required dimensions are apt to change. Rental space leased before building plans are completed is another problem. Store space is usually suggested in twenty-five-foot multiples by the promoter when he is contacting prospective tenants. After the lease agreements are made, it is too late for the promoter to approve of a plan with twenty-four-foot bays that would be modular with the four or six-foot widths in which tees are now being designed by Arizona producers. This one-foot difference between the rental space width and the modular bay can increase the cost of the building. To avoid problems such as this, the public should be better informed about the importance of architectural advice in the beginning stages of office and shopping center developments.

Standard-sized members developed through modular measure could bring about many savings in the production of prestressed concrete. For example, forming costs would be reduced because standard dimensions would increase the utility of forms by extending applications of their certain size to many more building projects. Modification expenses on

(Continued next page)

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existing forms would also be reduced. There is little that can be done to curb block-outs through which necessary utilities must be channeled, but width changes which are generally more costly than block-outs could be greatly reduced. The labor required to make these modifications and form changes is still another production cost item that would be lowered.

Aside from material and labor cost of new forms and modifications, there would be savings in engineering time due to fewer modifications of the basic designs. Finally, increased production efficiency would be the greatest cost-cutting feature of modular design. Because the manufacturer can afford to stockpile a modular unit, he can increase his efficiency by producing members of a popular design on idle prestress beds during light periods in the production schedule.

A committee composed of prestressed producers, architects, and engineers could be organized to study the dimensions most adaptable to the construction industry and the designs most economical for the prestressed manufacturer to produce. This committee could recommend dimensions and designs to be followed by prestress producers. The producers should then supply the architects and engineers with catalogs of the modular units they intend to produce. Finally, the architects and engineers should employ these modular members in their designs.

Although variations from modular designs in prestressed concrete will always be desirable in order

to create special effects, there seems little doubt that the majority of prestressed production could take advantage of the economic benefits made possible through modular design. It seems only natural that the prestressed concrete industry should attempt to improve its product and become more competitive through dimensionally-coordinated large scale production methods that have proved so successful in our American economy. Because of the nature of this product, prestress producers are dependent upon the architect for cooperation and assistance in developing a dimensional system that would make large scale production possible.

In the past, steel and other materials have been coordinated into the building industry. Builders cannot afford to let prestressed concrete remain a building material that needs special engineering development on every construction project.

- AIA -

Today two-thirds of our people live in cities or in the urban complexes which surround them. Of the 15 million increase in our population since World War II more than 90% has occurred in the great urban centers. Within the next decade we can anticipate that 80% of our people will be living in cities or city-centered metropolitan areas."

—Mayor Richardson Dilworth,
Philadelphia, Pennsylvania.

War Babies and the Pipe Trades —

Well, it won't be long now 'til the crop of babies born during National Defense and World War II days come of a home-buying age. Matter of fact, all economists are predicting a sparkling new boom in the home building business during the early 1960's.

In Arizona, this will mean increased responsibilities for the contractor and subcontractor. Not only will our own youngsters be in the market, we'll be getting even more newcomers as the younger generation, in its turn, seeks better living conditions.

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Architects In Public Service



State Board of Technical Registration

Martin Young,
New appointee.



Herrerias Brenner Mrs. Neeb Jobusch

One of the unwritten laws of a professional career is to offer that professional knowledge to the public. With architects, as with other professionals, that means that a great deal of time is spent serving on the many boards and commissions that are in operation for the public's welfare.

Such an agency is the State Board of Technical Registration, designed to implement the state Registration Law. Three members of The Arizona Society of Architects serve on that Board: John Brenner, E. D. Herreras, and Martin Ray Young, the latter

appointed to the Board last month to succeed Fred Jobusch, whose term recently expired. With Mrs. Rayma Need, Executive Secretary, and other Board members, these architects spend countless hours in investigations, hearings, the writing and reading of exams. The importance of the Board in enforcing the Registration Law is clear. As Jobusch stated it: "... human safety, health, and even the economic welfare of the state are — in important measure — dependent upon the competence of the professionals covered by this law."

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RECOMMENDED SPECIFICATIONS

Doors shall be flush type hollow core as manufactured by Glen-Mar Door Manufacturing Company, Phoenix, Arizona.

Rails — Top and bottom rails shall both be 10" wide.

Stiles — Shall be a minimum of 3½" wide of soft wood. (Alt.) Matching hardwood edges shall be a minimum of ½" after trimming.

Lock-Blocks — Shall be 24" long by 4" wide, centered vertically, giving a total width from outer edge of 7¾" of solid blocking.

Core — Constructed in two bays, separated by a 2" intermediate rail. Ribs to be ½" thick placed vertically spaced 2" apart, with tenoned ends received in mortised rails.

Faces — Shall be of three plies of veneer, hot press bonded, or Dor-Lux Masonite, ½" thick and smooth sanded.

Adhesives — To conform to CS 35-56 Type II water resistant bond unless otherwise specified.

Lighter in weight than solid core doors yet heavier and sturdier by far than the standard residential kind, GLEN-COR doors are "easy on the hinges" and are built to withstand the extra abuses of school and commercial traffic. Core design is such that adequate blocking is located where needed for the installation of all types of hardware, opening and closing devices.

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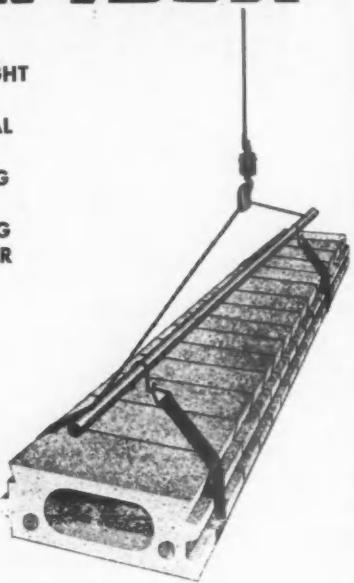
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Notable Quotes —

Modular measure will no doubt go down in history as a classic example of an idea which is perfectly logical, sensible and practical but which was unduly retarded on its way to general acceptance by plain ordinary conservatism, procrastination and buckpassing. The American Standards Association, the respected high-level organization, official sponsors, are accustomed to this in many fields, and have been perhaps too patient about slow development of technical standards, but they have now given it special priority and emphasis in collaboration with the new Modular Building Standards Association.

Modular measure is unique also in that you can have your cake and eat it too; an architect can benefit by using the modular system of dimensioning even if no modular materials existed, or the building can be modular in general and non-modular for special details and there are benefits if only a portion of the materials available are modular. It is always a case of everything, or something, to gain and nothing to lose. The project was handicapped for years with an unwieldy and formidable name — Modular Coordination, now . . . changed, and it was going along on a starvation financial diet, but the real drag has been the old "Let George do it" attitude. Like the old comic characters, Alphonse and Gaston, Alphonse the Architect says "You first, my dear Gaston, you make it and I'll specify it." Gaston the Producer says, "You first, my dear Alphonse, you design and specify it modular and I'll make it."

Modular measure, for years sponsored by AIA and Producers' Council, now has also the official support of Associated General Contractors and the National Association of Home Builders, altogether the highest possible sponsorship in the building industry. The Modular Building Standards Association is . . . functioning and individual architects and others can become members. This is all fine and necessary but what is really needed is that every architect who has not done so should immediately convert his office to modular methods (one project for transition period; after that, greatly improved efficiency). He should insist on modular materials or let non-modular be cut and fitted until modular are available. Instead of beating our breasts about concern for the public welfare and proclaiming leadership of the building industry, a prompt and general adoption of modular measure would be deeds instead of words and everybody would benefit. There should be an M-Day . . . , after which date all architects would design modular and only modular materials would be manufactured and sold.

—Walter A. Taylor in *AIA Journal*
November, 1957

AIA, AGC Hold 'Summit' Meet

Top officials of the American Institute of Architects and the Associated General Contractors of America held their first "summit meeting" in Washington, D. C., last month to discuss strengthening the relationship between these two major organizations in the construction industry.

AGC President James W. Cawdrey of Seattle, Wash., expressed the hope that the same spirit of friendly co-operation between the AIA and the AGC on the national level would prevail at the local level. He submitted several practical suggestions to facilitate better co-operation at the local level.

AIA President John Noble Richards of Toledo, Ohio, reemphasized the importance of close liaison between the architect and the general contractor in order to eliminate misunderstandings and to secure the benefits which result from understanding each other's work and problems.

The representatives discussed the single contract system, compared legislative policies and reviewed ways to get architects and general contractors to play an active role in redeveloping urban centers. Other subjects considered included retained percentages and scholarships.

The meeting was the first annual top level conference between the officers and key staff members of the two groups, and future meetings will provide an opportunity to review yearly programs, discuss major problems, and combine efforts on subjects of mutual concern.

In addition to Mr. Richards and Mr. Cawdrey, others present at the meeting were George S. Wright of Albuquerque, N. M., cochairman of the National Joint Cooperative Committee for the AIA; Carl W. Olson of Lincoln, Neb., cochairman of the National Joint Cooperative Committee for the AGC; AIA Executive Director Edmund R. Purves, and AGC Executive Director James D. Marshall.

- AIA -

The purpose of this architectural criticism (of most public housing) is not purely esthetic; it is as much for social and economic reasons; for unless public housing through outstanding site planning and building design gives its tenants "a boost in spirit and self-respect" and gains community support and acceptance by virtue of its visual contribution to the urban scene, it will have, in large part, failed. Public housing is as often unacceptable because of its appearance as it is because of its tenants. One important way to increase its palatability is to greatly improve "how it looks."

-William Finley, quoted in the *Washington Star*

Your

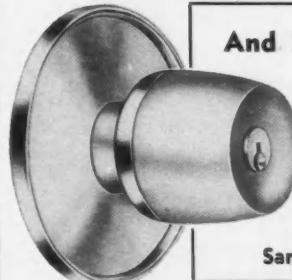
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MEMPHIS ARCHITECTS LEAD CIVIC PROJECT

Members of the Memphis Chapter, AIA have formed a non-profit corporation, known as the League of Memphis Architects, Inc. for the purpose of planning a new Civic Center for Memphis. The architects are donating their services free of charge. Working under the authority of a Civic Center Advisory Committee of leading citizens named by the Mayor and Commissioners of Memphis, the design team includes eight architects, a land planner and landscape architect, and a representative of the organization who made the Memphis City Plan.

Preliminary plans were presented June 19 at Memphis and revealed the design concept, which is not yet final. Work on the design studies was begun only after extensive analysis and correlation of facts pertinent to the requirements for the Civic Center. The League's published report details, with maps and charts, the findings with reference to traffic patterns and traffic desires, present and future; relationships to the central business district; parking requirements; public transit routes; land use and assessed valuation; utilities, topography, and urban renewal areas. The city pays the overhead costs of the project office up to \$30,000 for a period of about six months which includes, in addition to the design team, a full-time project manager and assistants working under the supervision of the designers, chosen by the League.



IN TUCSON

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New Leaflets On Architecture Available; Have Many Uses

Available from the Octagon is a series of four new leaflets written and produced by the AIA's public relations counsel under the direction of the national Public Relations Committee. The pleasingly designed leaflets cover: 1) "The Meaning of Architecture," 2) Residential Design, 3) Commercial Buildings, and 4) School Construction. They are designed as public relations tools for use by both AIA Chapters and individual architects.

The leaflets lend themselves to a number of uses; reception room displays; distribution to audiences after architect lectures and film presentations; direct mailings to community leaders, local officials, newspaper editors, and businessmen; enclosures with correspondence and invoices (designed to fit regular No. 10 envelopes as well as coat pockets).

The cost of the leaflets has been kept to a minimum to give them the widest possible distribution. The price for 100 copies of each leaflet is \$3.00 per 100 and \$27.50 per 1,000. Orders for less than 100 copies cannot be handled at the Octagon. Chapter officers may consider purchasing in quantity and making them available to members.

St. Charles
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to suit the Owner's home*



Beautifully detailed panels and a fine fruitwood finish brings the period furniture look right into the kitchen. Doors and drawer fronts are selected wood — but the units themselves are clean, functional steel. Distinctive hardware in antique brass.

IN PHOENIX



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CENTRAL ARIZONA CHAPTER NEWS

- Congratulations to Martin Young on his appointment to the state board of technical registration. Martin succeeds Fred Jobusch of Tucson.
- Box Cox, who has taken up residence in Tucson, has received notice of his transfer of membership to the Southern Arizona Chapter.
- The next chapter meeting will be held on September 10 at the ABC Club, 1425 E. Ocotillo Rd.

SOUTHERN ARIZONA CHAPTER NEWS

- The Saddleback Guest Ranch was the scene of the Chapter's evening picnic and swimming party August 7th. The party was attended by 55 members and their ladies.

Peggy Scholer was in charge of the events which took on an Olympics flavor with the swimming torch race, standing broad grin, and footrace (combined length of a couple's four feet).

The best designed and decorated lunch box was brought by Lew and Kak Place, according to costumed judges Sid Little, Lois Nelson and Terry Atkinson.

Door prize (an old, second-hand door with crystal handle) was won by Gordon Luepke, and a diamond-studded vanishing point went to Bob Reid in the "jawing" contest.

'Twas a great success.



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A test of the masonry mortar is necessary to determine that the design and specification requirements are met. Your balanced design is important and should be achieved.

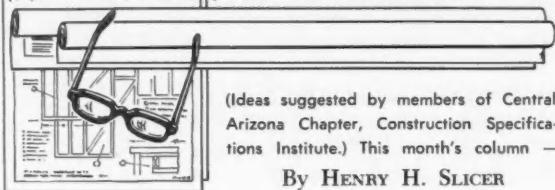
Testing of masonry mortar is accomplished on 2-inch mortar cubes made in a mold machined to the exact measurement. The cubes are stored under specified conditions and tested at specified age.

Laboratories are equipped to make the mortar test for you. They will also loan you the molds so that out of town jobs may be handled by your inspector.

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LOOKING AT THE SPECS



(Ideas suggested by members of Central Arizona Chapter, Construction Specifications Institute.) This month's column —

By HENRY H. SLICER

The use of "Modular Measure" in unit masonry is simply working out the 4" module with the material you are using. The masonry industry in Central Arizona is wholly changed over to the modular system.

Basically the unit dimension plus the thickness of the joint becomes a multiple of 4 in., and this dimension from center line to center line of mortar joints is known as the nominal dimension. Modular clay brick are laid vertically 1 course in 2 $\frac{1}{2}$ ", with the basic unit of 3 courses in 8 in. Horizontally they lay to exactly double the 4" module=8". Concrete block courses out vertically to the 4" module and to 4 times the module horizontally or 16".

In the past, the standard length of non-modular brick has been 8" and when laid with a $\frac{1}{2}$ " joint, the distance center line to center line of joints was 8 $\frac{1}{2}$ ". The length of backup tile used extensively with brick was 12" which, with the $\frac{1}{2}$ " joint, gave a center-line distance of 12 $\frac{1}{2}$ ". Obviously, it was difficult, if not impossible, to co-ordinate these dimensions so that a window opening would be an exact multiple of 4 $\frac{1}{4}$ " (one half brick plus $\frac{1}{2}$ joint) and at the same time a multiple of 6 $\frac{1}{4}$ " (one-half tile and plus one-half joint), and even if such an opening were obtained, few if any stock windows would fit into it. As a result, it was necessary to re-dimension masonry units on the job by cutting to fit around the window.

The same condition prevailed when the architect attempted to correlate his over-all building dimensions with the dimensions of the masonry units. In many instances composite walls are constructed of three types of masonry units whose non-modular dimensions, center line to center line of mortar joints, were: Exterior facing brick, 8 $\frac{1}{2}$ "; concrete block, 16 $\frac{1}{2}$ "; and glazed facing tile 12 $\frac{1}{4}$ ". To establish over-all building dimensions, which were exact multiples of one-half of these dimensions and, at the same time, would meet the requirements of the building, was usually impossible and, as a result, few architects attempted to do so. The co-ordination of masonry unit heights presented the same problems as the co-ordination of their lengths.

Now with the entire industry changing over to "modular measure" the architects will find it easier and cheaper to use the vast variety of masonry materials without fear of excessive cutting and they can be sure that the masonry units will work out to their dimensions specified.

Architect's Dream

By Betty Pustarfi

Sky-puncturing tower,
A spire of desire;
And caterpillar wings
Creeping from each side;
Stolid exploration transformed into butterfly
Lightness of discovery.

Penetrating sand and soil, the center shaft
Stronger than objecting rock,
Is sung in deeper verities,
Yet extends up to the top.

Silent walls of solid mixtures muffle
Gossip of transparent glass, absorb
The chatter of the fixtures, curb
Hilarity of murals.

The captive space exults
In new-found substance,
Freed from being nothing.

Caressing garden, holding fast
With the soft strength of adoration,
Giving scale, surrounding,
Exchanging reasons for existing.

On the heights,
Descending into plain; a tender king
Disdaining isolation, reigning
In the midst of fabrications.

The plan complete,
Quickly! Wake!
Before the men begin,
Before the dream collapses.

You can sleep again.

Notice

Architects! Spec Writers! Contractors!

When specifying or ordering concrete block, avoid costly confusion and job delays. Specify width first, then height, then length.

We are informed that nearly all block in this area is sold by that order of dimensions. Confusion may develop when ordered otherwise.

Remember: **WIDTH, then height, then length.**

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IN THE BOOK WORLD

FIVE FAMILIES by Oscar Lewis. Basic Books, \$5.50.

A recent dispatch from Mexico City told of a man who had long imprisoned his wife and children in a miserable hovel, forcing them to make insecticides which he sold in the city. When arrested, he was charged with bigamy by a woman in Chihuahua.

The story was palpable to anyone who had read *Five Families*, a revealing portrait of lives, customs and emotions in Mexico. Presented as a cross-section of that country today, the book describes in sometimes tedious but always lucid detail a day in the life and thoughts of selected families. They lived in a small peasant village in the country, slum tenements in Mexico City, a new working-class housing development, and an upper-class residential district.

The book is an engrossing depiction of what the author calls "the culture of poverty." In a Foreword, Oliver LaFarge says, "This work is more than a sampling of Mexico. It illuminates, painfully, something of the human condition of the masses, the myriad millions, who through . . . technology have suddenly become our near neighbors, whose good will or enmity may prove crucial to our own survival."

MODULOR 1 & 2 by LeCorbusier. Through exchange of experiences and discussions this study by a world-famous architect helps clarify the place of the modulor in the theory and practice of modern architecture. An account is given of the repercussions of the new measure throughout the world, along with descriptions and illustrations of many practical applications of the modulor. Vol. I, 243 pages, \$6.00. Vol. 2, 336 pages, \$8.00. Harvard.

THE BOOK OF LANDSCAPE DESIGN by H. Stuart Ortloff and Henry B. Raymore. In the past landscape architecture has been reserved for the very rich and for public projects. But today the face of America is changing. Migrations to the suburbs, increased public and private housing and business expansion are revolutionizing the natural scene. You can have a hand in shaping this new look in your own home grounds and in the community projects of your city, town or village. To fill the need for a wider and more general understanding of landscape design has been the authors' purpose in writing this book. Through the years architecture, engineering and horticulture have been combined to produce the art and science of beauty and utility that is landscape architecture as we know it today. Illus. \$3.95. Barrows.

ENGINEERING EDUCATION IN RUSSIA by Stephen Timoshenko. In this timely book, Dr. Timoshenko, one of the world's outstanding professors of engineering, describes his early teaching in Russia and his return visit there 44 years later to tour the technical and engineering schools. The author offers a brief history of Russian engineering education, a description of current schools, and a comparison of American and Russian curricula. 50 pages. \$1.95. McGraw-Hill.

ELECTRICAL ENGINEERING FOR PROFESSIONAL ENGINEERS' EXAMINATIONS by John Constance. The prime purpose of this book is to help prepare license candidates for professional electrical engineering and civil service examinations in various states. It is also extremely useful in preparing for the electrical section of the Engineer-In-Training examination. The book provides problems with solutions, mainly drawn from past examinations in many states. 384 pages. \$7.50. McGraw-Hill.

ENGINEERING ECONOMICS FOR PROFESSIONAL ENGINEERS' EXAMINATIONS by Max Kurtz. This book stresses the economics involved in professional engineering. Among the subjects covered by the author, a well-known consulting engineer, are basic law, professional ethics, mechanics of investment, sinking funds and annuities, depreciation and depletion, the continuous compounding of interest, and many others. 352 pages. \$7.50. McGraw-Hill.

DESIGN AND CONSTRUCTION OF GENERAL HOSPITALS by the U. S. Public Health Service. Here is the book which correlates hospital design with the new techniques of diagnosis, surgery, physical and mental therapy. Written by physicians, nurses, dieticians, hospital officials, architects and engineers. Shows plans of 30 hospitals, ranging from 20-bed to 400-bed capacity. Problems of design, equipment and facilities are discussed at length, and complete equipment and supply lists are recommended for hospitals of all sizes. 206 pages. \$13.50. Dodge.

PSYCHIATRIC SECTIONS IN GENERAL HOSPITALS by Dr. Paul Haun. Covers in detail the complicated design problems and equipment requirements of the psychiatric unit. Gives an account of the hospitalization of a typical patient from admission to discharge, and relates his needs, actions, reactions to the physical design of his surroundings. Plans of several VA hospitals are criticized, and floor plans of the psychiatric unit of a hypothetical 200-bed hospital are shown. 86 pages. \$6.00. Dodge.

STONEWARE & PORCELAIN: The Art of High-Fired Pottery by Daniel Rhodes. Concise and authoritative, this is a fascinating book about the tradition, techniques, and materials used in high-fired-pottery. The first section gives a brief history of Oriental and European stonewares and porcelain, written from the potter's point of view. The following sections are full of practical information on how to achieve the various colors and textures which make stonewares and porcelain unique. Decorative techniques are discussed at length, and the book contains a wealth of information on firing, reduction firing, materials and equipment, and on the shop and methods of work. Profusely illustrated with examples of porcelain and stoneware, both masterpieces of the past and contemporary work, with detailed descriptions and analyses. 219 pages. \$7.50. Chilton.

DOCTORS' OFFICES & CLINICS by Paul Hayden Kirk and Eugene D. Sternberg. The first work devoted exclusively to the design and setting of medical and dental clinics—a new building type that is sweeping urban and suburban America. 228 pages. Illus. Reinhold. \$12.00.

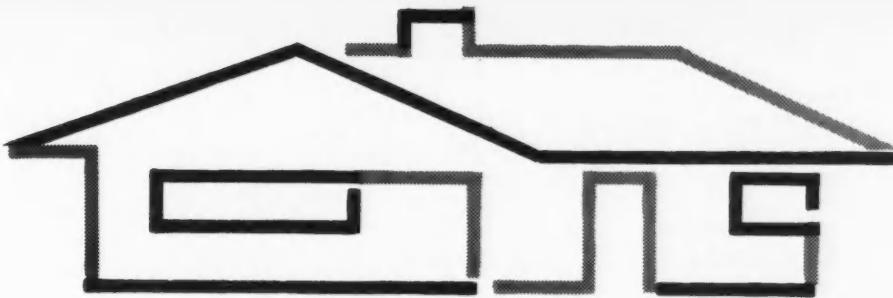
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